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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|------------------------------|------------------|
| 10/763,061 | 01/22/2004 | Randall Lee | F033-3 | 3725 |
| 25784 | 7590 | 09/07/2005 | | |
| MICHAEL O. SCHEINBERG P.O. BOX 164140 AUSTIN, TX 78716-4140 | | | EXAMINER CYGAN, MICHAEL T | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2855 | |

DATE MAILED: 09/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/763,061

Applicant(s)

LEE ET AL.

Examiner

Michael Cygan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 11, 13-17, 20-30, 34-37 and 41 is/are rejected.
- 7) ☒ Claim(s) 6-10, 12, 18, 19, 31-33 and 38-40 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

1. Claims 27-30 are rejected under 35 U.S.C. 102(a) as being anticipated by Baldeschwieler (US 5,824,470). Baldeschweiler discloses a probe tip used in a scanning probe microscope and a method for forming the probe tip comprising providing a shaped tip with a planar end (a cone with sloping sidewalls) by cutting a tapering probe tip support (e.g., ion milling; column 4, lines 30-38) on which an organic catalyzing layer is formed on the outer planar surface, on which a single carbon (single- or multi-wall-) nanotube is grown in which the nanotubule has a diameter substantially the same as the planar surface; the tip is brought into contact with a surface through the actuator of a scanning probe microscope; see Figures 1a, 1b, 6 and columns 15-20.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, 11, 13-17, 20-26, 34-37, and 41 are rejected under 35 U.S.C.

103(a) as being unpatentable over Cheung (PNAS April 2000) in view of Ren (APL August 1999). Cheung discloses a probe tip and method for forming the tip comprising providing a shaped tip with a planar end (a cone with sloping sidewalls) on which an iron catalyzing layer (having a diameter which may be above 5 nm; see Table 1 and first paragraph of 3811) is formed in holes on the outer surface, on which a single carbon (single- or multi-wall-) nanotube is grown; the tip is brought into contact with a surface through the tapping mode actuator of an AFM. The probe distal surface appears slanted (non-parallel to the base of the cone); see Figure 2a. See pages 3809-10 and Figure 1. Cheung teaches the claimed invention except for the use of a particle-beam-grown nickel catalyzing layer having a thickness of 15 nm and a lateral extent of 100 nm formed on top of (not in holes of) the probe tip, or multiple nanotube tips on multiple planar catalyst supports. Ren teaches the use of a particle-beam grown nickel catalyzing layer comprising multiple areas each growing nanotube tips having a (non-uniform, see Figure 2a) thickness of 15 nm and a lateral extent of 100 nm formed on top of (not in holes of) a probe tip used in scanning probe microscopy; see pages 1086 and Figure 2. It would have been obvious to one having ordinary skill in

the art at the time the invention was made to use a nickel catalyzing layer comprising multiple areas each growing nanotube tips having a thickness of 15 nm formed on top of (not in holes of) the probe tip as taught by Ren in the invention taught by Cheung to form the catalyzing layer, since Ren teaches that the nickel layer is an alternative to the use of embedded iron particles (column 1 of page 1086) and provides "fabrication without difficulty" of freestanding carbon nanotubes in scanning probe microscopy (see abstract).

Allowable Subject Matter

Claims 6-10, 12, 18, 19, 31-33, and 38-40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed 22 July 2005 have been fully considered but they are not persuasive.

Applicant argues that "deposition by electron beam evaporation" of Ren is not equivalent to the claimed "charged particle beam activated gaseous material". Firstly, an electron is a charged particle. An electron beam is, by definition, a charged particle beam. Impinging a charged particle beam onto a metal (such as the Ni in Ren) activates the metal, which evaporates into gaseous form (which eventually deposits on

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the desired surface). Therefore, the charged particle (electron) beam activated material as claimed is taught by Ren.

Applicant's argument about the array of Ren is not germane, since only the teaching of the formation of the charged particle beam activated gaseous material was derived from Ren. The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

With regard to claims 23 and 34, see Figure 2a of Cheung.

With regard to Baldeschweiler, applicant is attempting to understand nanoscale phenomena by using macroscale terms. Sharpening a tip does not result in an atomically sharp end; as shown in Baldeschweiler at column 17, a flat apex remains on the nanoscale even though, on the macroscale, the tip appears sharpened. Baldeschweiler desires the particular size of the flat apex in order to attach only a single macromolecule.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

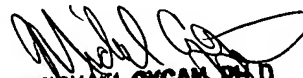
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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cygan whose telephone number is (571) 272-2175. The examiner can normally be reached on 8:30-6 M-Th, alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on 571-272-2180. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-1751.


MICHAEL CYGAN, PH.D.
PRIMARY EXAMINER